Coyotes (*Canis latrans*) in Ohio[1]

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ABSTRACT. **Past and present status of the coyote (*Canis latrans*) in Ohio was documented by a historical review, a survey of encounters, and a skull collection and analysis. Coyotes were first recorded in Ohio in 1919. In 1979 and 1980, 336 wild canid encounters were reported in 46 of Ohio's 88 counties. From 1982 to 1988, skull collections were made in 71 counties, yielding 379 (87%) coyotes, 10 (2%) coydogs, and 25 (6%) feral dogs. The coyote is well established and distributed throughout the state.**

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INTRODUCTION

Coyote (*Canis latrans*) observations and contacts have increased dramatically in the northeastern United States since the mid-1900s. Reports from Ohio hunters, trappers, and stockmen have typified the situation throughout this region. The objectives of the present work were to summarize historical records and to determine the distribution and status of coyotes in Ohio.

MATERIALS AND METHODS

The Ohio Division of Wildlife, Crane Creek Wildlife Experiment Station, investigated the status of coyotes in the state from 1978 through 1988. Included in the investigation were: (1) a historical review; (2) an assessment of sightings reported to game protectors; and, (3) a skull collection and examination.

Scientific journals, early historical diaries, popular magazines, and newspapers were searched for references to coyotes and "brush" or "prairie" wolves from the earliest record to 1978. A survey of museum collections at The Ohio State University Museum of Zoology, Columbus, and Cleveland Museum of Natural History, Cleveland, was also conducted.

Questionnaires were sent to all game protectors, agents, and wildlife management personnel in 1980. Respondents were asked to indicate: (1) the number of coyotes reported in 1979 and 1980; (2) known or reported coyotes trapped or shot in 1979 and 1980; and, (3) the approximate locations of reported coyotes. General information concerning encounters was also requested. Game protectors were not asked to differentiate between coyotes and coydogs, but simply to report all coyote-like wild canid encounters during the 2-year period.

In 1982, fur trappers and hunters were encouraged through notices and meetings to report the taking or observation of coyotes to game protectors. Wild canid skulls were collected when possible, labeled, frozen, and subsequently cleaned by boiling. Species determination of the cleaned and dried specimens was made by skull and tooth measurements utilizing linear discriminant analysis (McGinnis 1979). This collection was deposited as a reference source at The Ohio State University Museum of Zoology, Columbus, in 1989.

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RESULTS AND DISCUSSION

Thirty-two reported occurrences of coyotes in Ohio were documented in the historical review (Table 1). The earliest were in 1919 in Logan County and 1920 in Guernsey County (Fig. 1). Both accounts were from a popular sportsmen's periodical. No reports were found for the periods 1921-34 and 1961-71. However, reports were fairly regular from 1934-61 and three reports were noted from 1971 through 1978. Four records were found with unknown encounter dates.

The game protector survey reported 336 wild canid encounters in 46 counties (Fig. 2). Counties with the most reports were Ashland - 49, Knox - 33, Hardin - 30, Logan - 26, Harrison - 21, Preble - 17, Ross - 17, Pickaway - 13, Erie - 12, Mercer - 11, and Wood - 10.

During the period 1982 through 1988, 438 specimens were collected in 71 counties. Of these, 379 (87%) were determined to be coyotes, 10 (2%) were coydogs, and 25 (6%) were feral dogs. Twenty-four skulls were too damaged for analysis. The distribution of counties with validated coyote and coydog collections has been depicted (Fig. 3).

Because of differences in data gathering methods, degrees of verification, and the length of time covered in this study (1919-88), apparent anomalies in each data set should be reviewed. Absences of documented encounters occurred for rather lengthy periods (1921-34 and 1961-71). This absence of documented reports may reflect the situation that no interesting coyote/sportsman encounters were presented to periodicals for publication. The subsequent dwindling of reports through the 1960s and 1970s may indicate that coyote encounters were becoming more frequent and less newsworthy. More recent newspaper reports have dealt with increasing incidences of livestock damage.

Skull collections and coyote encounters reported to game protectors in east-central Ohio have been influenced by the bounty in Harrison County. Coyotes taken in surrounding counties could have been transported there for bounty collection. Recent claims for coyote damage to livestock (Claims Summary 2/87-2/88 Jack Carver, Wildlife Damage Specialist, U.S. Dept. of Agriculture, Columbus, OH) indicate that most counties surrounding Harrison have recorded a high incidence of livestock damage attributed to coyotes. Bounties were also in place in Logan, Shelby, Hancock, Hardin, and Fayette counties for short periods in 1984-85, but appar-

TABLE 1

Historical review of coyote occurrences in Ohio, 1919-1978.

Date	County: Location	Source
1919	Logan: DeGraff	Grubbs (1919)
1920	Guernsey: Salesville	Frame (1929)
1935	Logan: Bellefontaine	Hamilton & Whitaker (1979)
1939	Defiance	ODCNR* (1939)
1940	Madison: Plain City	ODCNR (1940)
1940	Logan: Monroe Twp.	Mitchell (1940)
1940	Union: Jerome Twp.	Mitchell (1940)
1941	Harrison: Smyrna	ODCNR (1941)
1941	Marion: Marion	ODCNR (1941)
1942	Henry: Washington Twp.	ODCNR (1942, 1943c)
1942	Lucas	Whitacre (1948)
1942	Wood	Whitacre (1948)
1943	Huron: Greenfield Twp.	ODCNR (1943a)
1943	Carroll: Augusta	ODCNR (1943b)
1946	Hocking: Big Pine Creek Twp.	ODCNR (1946)
1947	Preble: Fairhaven	Negus (1948)
1947	Putnam: Glandorf	ODCNR (1947)
1948	Trumbull: Mosquito Cr. Reservoir	ODCNR (1948)
1948	Harrison: Cadiz	Zody (1949)
1949	Muskingum: Dresden	Montgomery (1949)
1952	Portage: Ravenna	ODCNR (1952)
1954	Harrison	Gottschang (1981)
1956	Lorain: Elyria	Miller (1956)
1956	Pickaway	Ohio State Univ. Mus. Zoology
1961	Harrison	Gottschang (1981)
1971	Union: Jerome Twp.	Ohio State Univ. Mus. Zoology
1976	Muskingum: Powelson Wildlife Area	Ohio State Univ. Dept. Zoology - Teaching Collection
1978	Geauga: Chardon	Cleveland Mus. Nat. History
Unknown	Jackson: Franklin Twp.	Gottschang (1981)
Unknown	Guernsey	Gottschang (1981)
Unknown	Erie: Kelleys Island	Gottschang (1981)
Unknown	Montgomery	Gottschang (1981)

*Ohio Division of Conservation and Natural Resources

ently did not hamper the collection process. The absence of encounters in some hilly southern counties may be related to the rough terrain, large tracts of forest, and sparse human population (Fig. 2, 3). The number of reports from surrounding counties suggest that coyotes probably are present in this region but may be thinly distributed, thus lessening the chance of observation.

To assess report distribution and gain insight into coyote density, reports from all three phases of this investigation were pooled and reviewed by county (Fig. 4). A general distribution pattern is evident. Highest densities were found in central Ohio from Mercer County eastward to Harrison County. All prominent encounter areas tend to be associated with major river watersheds: the Great Miami in the southwest; the Scioto River in the south; the Walhonding, Tuscarawas, and Muskingum Rivers in the east; and the Maumee and St. Marys Rivers in the northwest.

Prior to European settlement, a mosaic of prairie and woodland extended into central Ohio, persisting into the 1800s. These large prairies were described as "clear meadows" of grass with elevated "islands" of oak-hickory forests (Trautman 1977). Because coyotes are associated with this type of habitat, it has been suggested that these areas may have supported a sparse native coyote population (Smith et al. 1973, McGinnis 1979). These interspersed prairies may not have contained many wolves (*Canis lupus*), which would have out-competed and excluded coyotes (Mech 1970). Often referred to as the "brush" or "prairie" wolf in early writings, coyotes may have been confused with wolves that were enumerated in journals of community hunts in the early 1800s. As wolves

FIGURE 1. Ohio counties with historical records of coyotes, 1919–78.

FIGURE 3. Ohio counties with verified coyote and coydog collections, 1982–88.

FIGURE 2. Ohio counties with reported coyote encounters, game protector survey, 1978–81.

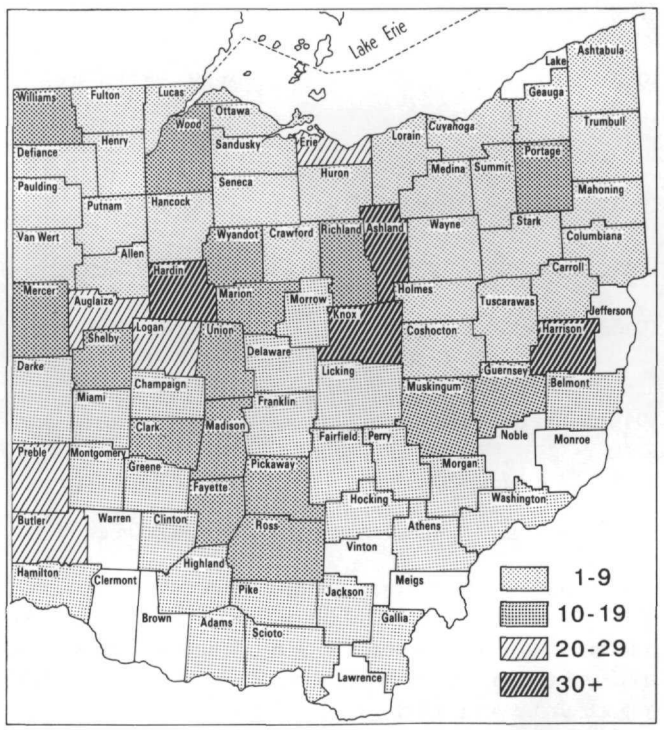

FIGURE 4. Combined county distribution of coyote reports in Ohio, 1919–88.

were reduced in numbers and finally extirpated in 1878 (McGinnis 1979), coyotes may have been able to persist and slowly expand their range, while adapting to the rapidly changing landscape.

In a discussion of the evolution of the eastern coyote in northeastern United States, McGinnis (1979) reviewed potential dispersal from source areas eastward, touching on the possibility of limited dispersal from Ohio to Pennsylvania, and the role of hybridization in expanding coyote populations. The incidence of coydog hybrids was high only in areas of expanding, widely dispersed coyote populations. Andrews and Boggess (1978) felt that most coydogs in Iowa were found in fringe areas of coyote range. Mengel (1971) reviewed behavioral and physio-

logical reasons why coydogs are adapted for survival less well than coyotes. These included inappropriate whelping time, lack of parental care by the male, and decreased fertility.

The Ohio skull collection and analysis reflected a low rate (2%) of coydogs in the sample. The 10 individuals collected were mostly scattered throughout the western and central portion of the state, generally between areas with high encounter rates which are described by occurrence of collected skulls and livestock damage claims. The low rate of occurrence and distribution of verified coydog skulls suggests that the Ohio coyote population is of long duration and has expanded into some areas of formerly lower coyote density.

Coyotes are now well established in Ohio and probably are present in all 88 counties. The absence of verified specimens from 20 counties may be the result of difficulties with the collection procedures, low human population densities, and/or low coyote population densities.

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